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ABSTRACT

A study investigated the way in which monolingual English-speaking college students developed new concepts for the linguistic structures and sociocultural symbolic meanings of gender that are unique to the Spanish language. Subjects were seven students of first-year intensive Spanish. They were asked to perform two problem-solving tasks: defining, on paper, three nouns denoting specific linguistic gender cases for animates in Spanish; and verbal construction of three complete sentences for use in a restaurant situation. Cognitive, cultural, and linguistic factors influencing concept formation were assessed. The seven cases were compared and analyzed individually. Results suggest a triple interaction between cognitive, cultural, and linguistic factors. In verbal reports it was found that the learner could access higher or lower forms of knowledge and perform at different developmental levels in relation to the particular semantic and linguistic characteristics of the second language content knowledge. At the same time, individual learning approaches related to individual learning histories emerged. The findings suggest that verbal reports can be used to enhance concept formation, and thereby improve second language learning. The study is preceded by a seven page summary. (MSE)

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Influence of Linguistic and Cultural Variables on Conceptual Learning in Second Language Situations

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Summary

Objectives

This is an exploratory-interpretative study with the objective of developing a new multidisciplinary model for explaining the influence of cognitive, cultural, and linguistic factors on semantic concept formation in second language learning situations. At a theoretical level, this study can reveal how thought is influenced by language and culture. More specifically the study deals with how monolingual English college students develop new concepts for the linguistic structures and sociocultural symbolic meanings of gender that are unique to the Spanish language. At a practical level, this new model can optimize second language learning processes by using conceptual learning as an instructional method for adults.

Perspectives and Theoretical Framework

The new triple interactional model proposed considers that the process of concept formation in second language situations occurs simultaneously at three levels: (a) abstract conceptual categories, (b) sociocultural symbolic meanings, and (c) linguistic structures and markers. The complexity of this process of concept formation in second languages has produced two levels of analysis, the process and product levels. Presently, studies at both levels are giving partial consideration to the triple interaction of cognitive, cultural, and linguistic factors. In addition, these two levels of analysis have also produced different research designs and methods. In this study we take a process level of analysis, using intropective report methods for studying concept formation, and thus considering the learner-participant as an "active knowing informant who is an insightful co-researcher". We consider that the process of giving subjects language problem-solving tasks and then interviewing them, helps learners to access internal metacognitive and metalinguistic processes that accelerate second language learning. Thus, we consider that asking learners to articulate the underlying concept formation process through verbal reports stimulates them to gain conscious access to procedural/explicit knowledge; and at the same time the reconstruction of language processes by the same learners permits a deeper psychological level of data analysis.

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In sum, we propose that introspective report methods, such as verbal reports and problem-solving tasks, can be used: (a) as a psycho-pedagogical technique for stimulating the learner to gain new insights for re-representing knowledge in different forms, and in different linguistic and cultural content domains; and (b) as instruments for the analysis and reconstruction of language production in terms of metacognitive, cognitive, and affective processes and strategies.

We also propose that the specific domain of knowledge in relation to semantic categories reflecting cognitive, cultural, and linguistic factors also influences the level of cognitive and metacognitive processes and strategies, and forms of knowledge used by second language learners. We consider that any language carries with it sociocultural symbolic meanings that can be reflected or absent in the linguistic structures of the language. Languages differ in what aspects of meaning they represent directly in their structures, and this fact influences the formation of semantic categories in second language learning situations. Gender has been selected as the linguistic structure to study, because the Romance languages have many markers at the morphological and syntactic level for gender where English has few or none. For example, in English gender is indicated directly by linguistic markers only for some living organisms (natural origin-e. g. , animals and people-); whereas in Spanish and in many other Romance languages, gender is indicated for all nouns including living organisms and inanimate objects (non-natural origin-e. g. , objects, and abstract concepts-). It is important to note that gender is just one example of the many linguistic structures that are different between Spanish and English.

In addition to proposing a new interactional model for explaining second language concept formation, we also attempt to integrate different domains of the literature on cognitive processes proposed to be related to second language learning. Thus, the theoretical framework of this study focuses on three previous models developed by Bialystock (1978), Karmiloff-Smith (1979, 1985, 1986), and O' Malley, Russo, Chamot, and Stewner-Manzanares (1988). The integration of these three model is reflected on the content categories used for data analysis that focus on language learning processes used for concept construction at three different levels: (a) forms of knowledge; (b) developmental phases; and (c) metacognitive, cognitive, and social-affective language learning strategies. This framework makes a distinction between intralinguistic knowledge (i. e. , knowledge of the target language) and extralinguistic knowledge (i. e. , all other forms of knowledge including the first language, sociocultural knowledge, and topic knowledge). These two types of knowledge can be represented on a continuum of explicitness ranging from a vague, implicit, and insecure form to a clear explicit, and secure form. Finally, in our framework, learners of a second language are said to invoke different strategies (metacognitive, cognitive, and social-affective) to acquire the appropriate concepts about the second language.

Method

Subjects. Subjects for this study were seven volunteer students of a lower division level, first year intensive Spanish class. The first author of this study had a double role, as she participated in this study as the instructor for this Spanish class and also as the researcher. The five female students were from an Anglo ethnic background, one male student was from a Hispanic background, and one male student was from an African-American background. All students were monolingual English speakers in the process of learning Spanish as a second language, all between the ages of 19 and 21. Five were Freshmen and two were Juniors. Their majors ranged from Psychology (2) to Communications (2), to Education (1), and to Computer Science (1). Five students had at least two years of high school Spanish, one student had studied four years of French, and

to study Spanish for travel purposes and to communicate with native speakers, who usually were family members. Four subjects reported the desire to study Spanish for career purposes and to fulfill university requirements. When asked about their expectations for the Spanish class at the beginning of the semester, subjects reported that they expected to acquire "a strong knowledge of the language and the culture".

Instruments. Immediately consecutive verbal reports were used for data collection. All interviews were conducted in English. Subjects were asked to complete two problem-solving tasks involving definitions and a role-playing situation and then, interviewed immediately. Two problem-solving tasks were designed for conducting verbal reports in order to access metacognitive, cognitive, and affective language learning processes. The first task consisted of defining three nouns denoting specific linguistic gender cases for animates in Spanish. Subjects were required to produce the appropriate article for the noun, and to use categories and descriptions to fill in the complement part of the definition. The first and second nouns corresponded to neutral gender cases in which the article defines if the animate referent is feminine or masculine (e. g. , "el/la jóven, el/la cliente"). The third noun corresponded to a collective noun for animates that is a special case (i. e. , generally nouns ending in "e" tend to be masculine, but "gente" is linguistically feminine -"la gente"-; and moreover is counter the linguistic rule stating that masculine prevails over feminine gender -"gente" is linguistically feminine and encompasses both physical genders-). Subjects were asked to write in Spanish at least 5 words per definition, and to define the word so that their classmates could guess the word being defined. Students were familiar with these two problem-solving tasks from previous class activity.

The second task was a situation that gave the subject a real-life context for communicating functionally with the Spanish language. The following directions were given to the subject for the second task: "You are at a Mexican restaurant and you are very hungry. You would like to accomplish three actions: (a) call the attention of the waitress; (b) order 7 items: tortillas, chicken, rice, tomatoes, flan, and apple pie; and (c) ask for the bill". Subjects were asked to write three complete sentences, one per each action, with at least 5 words per sentence. Subjects were also told to concentrate only on what they would say in order to accomplish the three actions, and not to write a dialogue between them and the waitress. That is, the situation was asking the subject to play the role of the client in a restaurant.

The verbal reports were conducted in the office of the instructor for the class and first author of this paper, which was a quiet environment. Verbal reports were also audiotaped for subsequent analysis. The questions used to begin the verbal reports were general open-ended questions common to all subjects, and these were followed up with some specific questions following the train of thought of the subject. The researcher always used a general question referring to the underlying reason that the subject had for producing a specific linguistic structure of interest for the study (i. e. , Why did you use_____ ? , specific linguistic structure). Probing was used for stimulating subjects to get new insights leading to construct higher forms of knowledge during the interview.

Variables. Three variables or factors influencing concept formation in second language learning situations were considered in this study: cognitive, cultural, and linguistic. Cognitive factors include language learning strategies, forms of knowledge, and developmental phases. Linguistic factors included two functions in relation to gender: (a) the linguistic function at the morphological syntactic level, and (b) the semantic function that includes general rules, regular cases, and exceptions. Cultural

factors included two levels: (a) by origin, in relation to natural physical gender including animates, and non-natural origin in relation to inanimates; and (b) by languages, in relation to sociocultural symbolic meanings common to Spanish and English, and unique to the Spanish language; and in relation to linguistic structures and markers common to Spanish and English.

Data analysis. Theory triangulation was used as we tried to interpret a single set of data from different integrated theoretical perspectives. In addition, a qualitative content analysis of nominal categories derived from the actual data was used in order to find associations or patterns among variables in relation to theoretical and applied objectives of this study. Verbal reports were analyzed at three different levels: utterances, clusters, and semantic categories for gender at a case and also at a cross-case analysis levels. Two independent judges categorized each subject across all nominal categories (i. e. , linguistic and cultural variables -semantic categories for gender-, and cognitive variables -language learning strategies, forms of knowledge, and developmental phases-). Before the data analysis was conducted a high reliability coefficient across judges ($r = .81$) was established.

Results

With the purpose of integrating the summary of data report, data interpretation will follow three forms suggested by Bogdan and Biklen (1982): (a) thesis or propositions related to the integration of literature and the triple interactional model proposed in this paper, (b) themes that encompass theoretical formulations emerging from data analysis in the form of patterns or abstract conceptual categories, and (c) topics that include descriptions of specific findings. In addition, data were analyszed at the cross-case analysis level, and also at the individual case analysis level.

Cross-case analysis level. In light of themes or patterns found in data analysis at the cross-case level, we propose the thesis that language learning is a two-step process that requires concept formation of linguistic representations at the sequential level in relation to general linguistic rules; and at the same time requires concept formation of semantic representations at the simultaneous level in relation to the triple interaction of cognitive, symbolic, and linguistic factors. That is, we propose that language learning is a conceptualization process of classifying culturally and linguistically bound, and thus semantic representations. Moreover, the two second language learning processes stated by Gonzalez (in press) in relation to assimilation of concepts that are similar between Spanish and English, and the need for accommodation processes for concepts that are different between languages was also present in this first emerging theme in the data. In sum, the thesis emerging from conceptual abstract categories found in the data suggested that the same learner thinks at different developmental phases in relation to the content knowledge domain that in second language learning situations represents cognitive, cultural, and linguistic factors.

With the purpose of illustrating this first emerging theme quotes from learners in relation to specific words will be used. In comparison to other clusters, the cluster "gente" (people in English) elicited higher level cognitive (e. g. , deduction) and metacognitive (e. g. , inferencing) strategies, forms of knowledge (e. g. , explicit relation between extralinguistic general or topic knowledge and knowledge of the target language markers or system), and developmental phases (e. g. , phase three); both more frequently and with a vast repertoire across learners. Thus, the word "gente" is linguistically feminine and singular; however, it refers to both genders at the symbolic cultural convention level, and is conceptually a collective noun encompassing both physical genders referring to animates at the abstract level. Therefore, for the word "gente", a

simple sequential linguistic conceptual formation process does not suffice; the concept formation problem will be solved only if the three cognitive, cultural, and linguistic factors are taken into account simultaneously by the learner. It is our thesis that linguistically and semantically the word "gente" calls for the construction of a new concept as it goes against rules. Therefore, the learner engages into the use of metacognitive strategies at the highest forms of knowledge and developmental levels.

The second emerging theme at the cross-case analysis level was that verbal reports revealed the underlying cognitive, metacognitive, and metalinguistic processes of second language learning used as study skills by second language learners. A third theme was the appearance of new insights, new access to explicit knowledge and to the construction of new forms of knowledge (i. e . , new relations across linguistic concepts, new intralinguistic-extralinguistic connections, new inferences at a higher cognitive level) during the course of the interview. We felt that through verbal reports we could access "invisible" or internal language learning processes that were occurring before us. Thus, in the process of trying to explain the reason why a particular linguistic structure was produced, the language learner could understand new forms of knowledge, often stimulated by the questions and probing of the researcher. Thus, learners revealed in the verbal reports how they formed new concepts by re-representing knowledge from lower to higher developmental phases. That is, the results support the thesis that the type of questions raised during the course of the verbal reports was related to the type of information accessed by the subject. As a result, it is our thesis that the type of questions used to elicit verbal reports in this research study served as an opportunity for language learners to consciously access new insightful knowledge at higher developmental levels. We propose that verbal reports can serve as a psycho-pedagogical tool for increasing accessibility to declarative knowledge by the language learner. We also propose that verbal reports can reveal how language learners represent knowledge through language, and as a result, the relation between language and thought.

The fourth emerging theme across cases was the preference of specific language learning strategies that appeared more frequently in relation to forms of knowledge used by the learners. For the explicit form of knowledge the higher level cognitive strategies preferred were deduction and elaboration; which indicated the presence of inferencing processes for constructing new semantic reprsentations for concepts that were different between Spanish and English (i. e. , cognitive variable indicating differences by languages). For the implicit form of knowledge the lower level cognitive strategies preferred were auditory representation, visual imagery, repetition, and the use of key words, indicating the direct application of rules for concepts that were similar between Spanish and English.

Individual case analysis level. At the individual case analysis level, the first emerging theme was the presence of different forms of knowledge and developmental phases within the same subject in relation to the cultural and linguistic characteristics merged in the semantic categories for gender that appeared for different words. Words that corresponded to the general linguistic rule evoked lower level cognitive strategies in every subject. In contrast, words that corresponded to specific semantic category cases evoked higher level cognitive and metacognitive strategies. In sum, the same learner could use different learning strategies, forms of knowledge, and developmental phases in relation to different content domains of knowledge. That is, words that differed more from the general linguistic rule required more simultaneous and higher level thought processes than words that were closer to the general linguistic rule in the same learner.

In addition, four more related themes emerged from data analysis at an individual case analysis level. The second emerging theme was the presence of individual learning styles that were associated with a tendency to perform at a specific performance level and to show potential for achieving at a higher developmental phase. A third emerging theme observed in individuals was a tendency to use specific cognitive and metacognitive strategies that corresponded to higher or lower forms of knowledge and developmental phases, such as explicit or implicit intralinguistic and extralinguistic forms of knowledge. A fourth emerging theme was the use of a limited or a vast repertoire of cognitive and metacognitive learning strategies in a specific learner, which was also related with the preferred form of knowledge used and developmental phase achieved. A fifth emerging theme was the relation between learners' specific strategies, forms of knowledge, and developmental phases and their personal experiences with the Spanish language (i. e. , context of second language learning -formal and/or visits to Spanish speaking countries-, knowledge of other second languages -French-, contact with the Spanish language during early childhood).

Conclusions

We conclude that there is a triple interaction between cognitive, cultural, and linguistic factors affecting concept construction in second language learning situations. In the verbal reports it was revealed that concept construction is a two-step process, encompassing a sequential and a simultaneous process in relation to the linguistic or semantic levels of content knowledge domains in second languages. Thus, the same learner could access higher or lower forms of knowledge, and performed at different developmental phases in relation to the particular semantic and linguistic characteristics of the second language content knowledge.

At the same time, we also found particular individual learning approaches that were related to their individual learning histories. The most advanced students could produce and comprehend explicitly the relations between knowledge of the second language and all other forms of extralinguistic knowledge including the first language, sociocultural, and topic knowledge. In addition, the more advanced learners were able to access explicit knowledge in a secure, clear, and firm form. In contrast, the less advanced learners could not produce nor comprehend the relations of knowledge intralinguistic and extralinguistic forms of knowledge. Some learners were at an intermediate level of explicit production and comprehension of the relations between the second language and all other forms of extralinguistic knowledge. These intermediate learners could produce and comprehend some specific cases of the relation between extralinguistic and intralinguistic knowledge, but could not generalize their explicit knowledge (i. e. , topic knowledge). All the learners could benefit from the use of verbal reports because with the help of the scaffolding role of the interviewer, they could gain implicit and/or explicit knowledge of the relations between intralinguistic and extralinguistic knowledge.

Scientific and Educational Implications of the Study

This study is relevant from theoretical and applied perspectives. It presents a model for gaining understanding of the influence of linguistic and cultural factors on conceptual learning in second language situations, leading to insights on how language learners develop concepts for new linguistic structures and symbolic cultural meanings in a second language. At an applied level, this study suggests a new educational approach for teaching a foreign language through conceptual learning using verbal reports for gaining higher levels of knowledge and study skills.

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Running Head: CONCEPTUAL SECOND-LANGUAGE LEARNING

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Influence of Linguistic and Cultural Variables on Conceptual Learning in Second Language Situations

This is an exploratory-interpretative study that will lead to the creation of a new model for gaining understanding of the influence of linguistic and cultural factors on semantic concept formation in second language learning. Thus, this is an inductive study that aims to develop a new multidimensional model and open new research questions that can shed light on the triple interaction of cognitive, cultural, and linguistic factors in second language concept formation. At a broad level, this is a study of the relationship between language and thought, as it is our argument that second language learning situations are fruitful for highlighting the processes by which thought is reflected and influenced by language and cultural factors. More specifically, this study deals with how monolingual college students develop new gender concepts that are unique to the Spanish language and culture. These new gender concepts in Spanish reflect semantic categories that include the interaction of linguistic structures, cultural or symbolic meanings, and abstract conceptual categories. We propose that the process of concept formation in second languages is influenced by the presence of common or different first and second language structures, cultural symbolic meanings, cognitive and metacognitive processes, and different forms of knowledge. The main educational implication will be the optimization of second language learning processes by using conceptual learning as a method for instruction for adults (i. e. , middle and high school, and university levels -graduate and undergraduate students, faculty, and administration personnel-).

Understanding how second language learners represent semantic concepts is a complex multidimensional problem with important educational implications that has been the focus of much research and has yet to be solved. Past research studies (e. g. , Bialystock, 1978; Karmiloff-Smith, 1979, 1985, 1986; O'Malley, Russo, Chamot, & Stewner-Manzanares, 1988) have only partially considered the influence of cognitive, cultural, and linguistic factors. To date it is still not known how the process of concept learning in second language situations is related to the interface of factors steming from

cognitive, linguistic, and cultyral domains. Contradictory results of past research studies 3
may be related to the partial consideration of the triple interaction of conceptual, cultural, and linguistic factors for explaining second language learning. We propose that these contradictory results are related to two different levels of analysis of second language learning, the process and product levels. Thus, the contradictory findings derived from the process and product level of analysis can be related to an analysis centered on cognitive underlying processes versus an analysis focusing on the verbal products at a contrastive, error, or performance levels.

In addition, we propose that the study of second language learning at the cognitive processes level can be enlightened by the use of introspective methods that focus on concept formation. We argue that the involvement of a subject as an "active knowing informant" is a key factor for discovering underlying cognitive processes in second language learning. We also argue that the presence of historical dichotomies in the level of analysis of second language learning (i. e. , process and product levels) is related to the difficulty of labelling, stating an operational definition, and measuring the semantic process of concept formation. We consider that introspective methods give access to a new psychological dimension of metacognitive and metalinguistic processes that view the subject as an "insightful co-researcher". Moreover, we propose that the interface between cognition, culture, and language can be studied through problem-solving tasks that require the subject to articulate the underlying concept formation processes through verbal reports. In addition, verbal reports can also stimulate the language learner to gain conscious access to procedural or explicit knowledge in the process of concept formation. Thus, we propose that through the use of verbal reports we can access the process of semantic concept construction in which meaning is represented at the linguistic, symbolic, and abstract levels by the second language learner.

We also propose that the domain of knowledge in relation to semantic categories for gender can also influence the level of cognitive and metacognitive processes, and forms of

knowledge used by the second language learner. That is, the same learner can be at different developmental phases depending on the specific characteristics of the content to be learned which has specific characteristics at the linguistic structures level and its underlying cultural symbolic meanings. Thus, we propose that there will be an interaction between the specific cultural and linguistic characteristics, the specific language learning strategies, and forms of knowledge used by one particular learner and also across learners.

In sum, in this research study a new triple cognitive-cultural-linguistic model for explaining second language concept formation in college students was explored. College students learning Spanish as a second language were selected as subjects to test empirically the model because they are natural laboratories for the interaction among cognitive, cultural, and linguistic factors. This new model proposes that concept formation in second language situations is a semantic process that is linguistically and culturally bound. Thus, we propose in this research study that cognitive, cultural, and linguistic factors affect the level of metacognitive and cognitive strategies and forms of knowledge used for constructing concepts by second language learners.

Objectives

The theoretical objective is to generate a new model that can explain the influence of cognitive and linguistic factors on the process of concept construction in second language learners. We anticipate that a triple interaction among cognitive, cultural, and linguistic factors occurs at the semantic level when second language learners use cognitive and metacognitive strategies and different forms of knowledge for constructing concepts. The applied objective is to study how foreign language learning processes can be optimized when the instruction is based on conceptual learning of linguistic structures and sociocultural symbolic meanings. Thus, the applied objective is to generate a new instructional approach for teaching a second language through conceptual learning, using: verbal explanations of correct and incorrect discourse production in oral and written tasks; problem-solving tasks; scaffolding and probing as an instructional and data collection

method; metacognitive, cognitive, and affective strategies; and sociocultural and topic knowledge of the first and second language.

Theoretical Framework

We attempt to integrate different modules of literature in cognitive processes proposed to be related to second language learning. Thus, the theoretical framework of the study focuses on three previous models developed by Bialystock (1978), Karmiloff-Smith (1979, 1985, 1986), and O' Malley et al.(1988). The integration of these three models is reflected on the content categories used for data analysis which focus on language learning processes used for concept construction at three different levels: (a) forms of knowledge; (b) developmental phases; and (c) metacognitive, cognitive, and social-affective language learning strategies. This framework makes a distinction between knowledge of the target language (i. e. , intralinguistic form of knowledge) and all other forms of knowledge (i.e. , extralinguistic forms of knowledge including the first language, sociocultural, and topic knowledge). These two types of knowledge can be represented on a continuum of explicitness ranging from a vague, implicit, and insecure form to a clean, explicit, and secure form. Finally, in the framework, learners invoke different strategies (metacognitive, cognitive, and social-affective) to acquire the appropriate concepts in the second language which reflect different developmental phases.

In addition, we also present a review of the literature on methodological problems that will help us to formulate and answer specific design and methodological questions. This review focuses on methodological dichotomies between introspective or qualitative and experimental or quantitative research methods, and as a result a dichotomy between a product versus a process oriented research design. We propose that these methodological dichotomies can be solved through the use of introspective methods in the form of verbal reports about problem-solving tasks. We consider that using the subject as an "active knowing informat" or "insightful co-researcher" can help us to access underlying cognitive and metacognitive processes used for concept construction that are deeper than just a

surface level analysis of data that focuses on products (i. e. , contrastive, error, and performance levels of data analysis). Finally, we integrate this literature review on cognitive processes and methodological dichotomies with a new triple-interactional model based on cognitive, linguistic, and cultural factors influencing concept formation proposed in this research study .

Language Learning Processes Used for Concept Construction

Language learning processes and forms of knowledge. Bialystock (1978) presented a model of second language learning which attempted to account for discrepancies between individual achievement and semantic domains. The operation of the model is explained in terms of learning processes and strategies that are organized in three levels: input, knowledge, and output. The knowledge level assumes that information about a language may be represented in three ways: other knowledge, explicit and implicit linguistic knowlege. These three levels refer to the information the learner brings to a language task, and each contributes to the attainment of language proficiency. Other knowledge refers to all other information the learner brings to the language task explicitly or implicitly (e. g. , knowledge of the native language or other languages, information about the culture associated with the target language, knowledge of the world, etc.). Thus, having access to other knowledge is important because the meaning of linguistic knowledge is sometimes dependent upon particular cultural connotations. That is, whereas the use of the word in appropriate contexts is implicit, the specific cultural aspects of the meaning and its occassions for use may be articulated explicitly.

The difference between explicit and implicit linguistic knowledge refers to whether or not internal representations can be accessed by the language learner. Explicit linguistic knowledge contains all the conscious facts the learner has about the language, which can be expressed verbally. Implicit linguistic knowledge is the intuitive information upon wich the language learner operates in order to produce responses at the comprehension or production levels in the target language. The content for explicit and implicit linguistic knowledge may

include some grammar rules, vocabulary items, pronunciation rules, etc. Three functions are assigned by Bialystock (1978) to the explicit linguistic knowledge source: (a) to act as a buffer for new information about language in which if continued use, the information may become automatic and transferred to implicit linguistic knowledge; (b) to act as a store for information which is always represented explicitly; and (c) to act as an explicit articulatory system. That is, information that is represented in implicit linguistic knowledge form may be made conscious or explicit after the learner has used repeatedly the linguistic structures. In contrast, only one function is ascribed to the implicit linguistic knowledge form. It is a working system containing all the information about the target language necessary for most spontaneous comprehension and production tasks. It is important to notice that the distinction between the two knowledge sources is defined in terms of function rather than content.

Developmental phases. Karmiloff-Smith's (1986) presented a model for explaining representation of knowledge through language that focuses on cross-developmental phases of production and comprehension. Her general argument is that the two level dichotomies used up to now for describing knowledge (e. g. , implicit and explicit, procedural and declarative, unconscious and conscious, representational and metarepresentational) are insufficient to capture the complex nature of the cognitive processes leading to conscious access of verbal knowledge. She proposed that the concept of domain solves the problem of duality, because the two dimensions are viewed as a continuum with different levels. For Karmiloff-Smith (1986) domain is a dimension which includes different hierarchical levels of content transformations of representational codes (i. e. , verbal and no-verbal) and cognitive processes at higher and lower levels. Thus, the concept of domain is a horizontal sub-structure or micro-structure of the total mental structure or macro-structure.

Furthermore, according to Karmiloff-Smith (1986) domain knowledge is separated into modules, which are represented in to different codes, which differ in the accessibility levels. For example, declarative knowledge (i. e. , knowing what or implicit knowledge)

and procedural knowledge (i. e. , knowing how or explicit knowledge). Accessibility is the central domain because it can explain behavior in terms of the developmental construction of internal world representations in to different codes or domains (i. e. , micro-processes) through a model of inter-domains or metaprocesses. Construction of knowledge is a developmental process that includes progressive representational explicitations at several levels of metacognition. According to Karmiloff-Smith (1986) metacognitive processes include the acquisition of procedural or explicit knowledge of a general strategy for learning how to learn, and to have self-regulation of actions or intentionality through conscious control, which in turn makes possible flexibility and creativity. The possibility of representing knowledge through different continuous domains such as verbal representations gives access to higher order concepts, to propositional thinking, and logical reasoning. Semantic networks are constructed with the enrichment of connections, integration of representations in superordinate and subordinate hierarchies among the concepts that articulate the domain." Thus, metaknowledge is made conscious through language. That is the reason why linguistic encoding or transformation of representation through the verbal domain (i. e. , metalinguistic processes) is considered by Karmiloff-Smith (1986) as the ultimate metacognitive knowledge. In sum, language is the most abstract representational system for cognition.

Karmiloff-Smith (1986) considered that representational change is crucial to an understanding of language acquisition and of cognitive development in general. She focused on the function of metalinguistic awareness for language acquisition, as this function consists of underlying processes of representational change. Thus, developmental change takes the form of macroprocesses that are progressively made explicit and are re-representing knowledge in new restructured semantic relations. Karmiloff-Smith (1986) presented a three-phase, multidimensional model for the explanation of the relations between implicit or unconscious and explicit or conscious metacognitive processes. These three phases stress the distinction between implicitly defined representations and

progressive representational explicitation at multiple levels of processing, culminating in the possibility of conscious access. Linguistic cohesion in discourse production involves two problems for the language learner: (a) the reorganization of memory entries such that linguistic terms become systematically organized, and (b) the creation of a control process in the form of a discourse structure to constrain the production of narrative. Across these three developmental phases the control process changes from one that is predominantly stimulus-driven to a predominantly top-down controlled discourse structure.

According to Karmiloff-Smith (1986), phases apply to specific domains rather than across domains, and are also loosely age-related. Thus, phases are recurrent cycles of processes that are repeated as the different aspects of the linguistic system develop. Then, language learning is not a simultaneous but a sequential process of rule learning that is influenced by recurrent transformation of knowledge in different domains and at different macrostructural levels. At the first phase, the cognitive processing of the stimulus determines the linguistic encoding, resulting in the formation of primary explicitations of one-to-one mapping of form and function with no rules that is not accessible to consciousness. At the second phase networks of semantic representations of linguistic structures in different contexts are explicitly defined. Robinett and Schachter (1983) presented developmental errors as different levels of second language rule learning, which encompass overgeneralization, ignorance of rule restrictions, incomplete application of rules, and false concepts hypothesized. We propose that these four different developmental errors ca be included in the second developmental phase.

At the third phase, the learner is able to represent knowledge in an abstract code, and to restructure representations into linguistic systems that are explicitly defined and linked semantically. Thus, at this third phase, conscious access results from representational redescriptions in multiple domains. At this third phase a transformation or re-representation from non-verbal to verbal codes has taken place making the learner able to connect abstract codes with verbal metaknowledge. That is, thinking is not constrained

anymore by temporal and causal factors; but there are multiple representations of the same knowledge in different codes which become explicitly linked via a common code. As a result, the learner has constructed a cognitive system that is very flexible, and can explicitly relate semantic networks. These changes in the control processes which put constraints on narrative production are related to changes in long-term memory organization of nominal devices. Thus, representational changes in memory pass through three recurrent phases across development and across all the different aspects of a domain as they are being acquired.

Interface between Bialystock's forms of knowledge and Karmiloff-Smith's developmental phases. Regarding forms of knowledge, nominal categories were adapted from Bialystock's model (1978) in order to reflect a continuum of explicitedness from implicit to explicit relations between knowledge of the target language (i. e. , intralinguistic knowledge) and all other forms of knowledge (i. e. , extralinguistic knowledge). The seven response nominal categories used in this research study for data analysis were: (a) extralinguistic general knowledge, (b) extralinguistic topic knowledge, (c) explicit relation between extralinguistic general or topic knowledge and knowledge of the target language in reference to the system (i. e. , linguistic structures and rules) and/or marker (i. e. , specific suffix or ending), (d) explicit intralinguistic knowledge of the target language in reference to the system, (e) explicit intralinguistic knowledge of the target language in reference to the marker, (f) implicit intralinguistic knowledge of the target language in reference to the system, and (g) implicit intralinguistic knowledge of the target language in reference to the markers. These seven categories adapted from Bialystock's model (1978) were combined with Karmiloff-Smith's model (1979) referring to developmental phases. The first three categories were considered to indicate that the learner was at the third developmental phase. Especially the third category indicating a relation made between extralinguistic and intralinguistic knowledge was considered to reveal the construction of new conceptual relations or insights by the language learner (i. e. , a metacognitive strategy of inferencing).

The fourth and fifth categories were considered to indicate that the learner was at the second developmental phase as the subject could access consciously linguistic knowledge of rules and specific cases; however no relationship was made with extralinguistic or other prior knowledge that the subject had. The sixth and seventh categories were considered to indicate that the subject was at the first developmental level, as the learner could not access verbally the underlying strategies and forms of knowledge used for learning the linguistic structure or marker (see Appendix A for the operational definitions of these seven categories referring to forms of knowledge).

Language Learning Strategies

According to Bialystock (1978), language learning strategies are defined as optional methods for bringing relevant knowledge to the language task that has the effect of improving second language learning. It is our argument that the use of language learning strategies proposed by O' Malley, et al. (1988) are related to the forms of knowledge suggested by Bialystock (1978), and to the developmental phases proposed by Karmiloff-Smith (1978, 1985, 1986). We also suggest that the language learning strategies used by individuals will vary in relation to their style and developmental level, and also in relation to the linguistic and cultural content being learned reflected in this study in gender semantic categories.

O' Malley, et al. (1988) presented a classification system of three types of learning strategies: metacognitive, cognitive, and social-affective. The first two were adapted from Brown and Palinscar (1982); and the third one was developed by O' Malley et al. (1988). We consider that metacognitive strategies correspond to explicit knowledge and the third developmental phase because the learner is able to access consciously a verbal explanation for the production of linguistic structures. According to O' Malley et al. (1988) metacognitive language learning strategies include: advance organizers, directed attention, selective attention, self-management, functional planning, delayed production, self-evaluation, monitoring, and inferencing (see Appendix B for the operational definition of

metacognitive strategies). We consider that some of the cognitive language learning strategies pointed out by O' Malley et al. (1988) correspond to an implicit form of knowledge because the learner uses automatic processes for producing or comprehending language. We consider that cognitive language learning strategies that encompass implicit knowledge processes include: repetition, directed physical response, imagery, auditory representation, and the use of key words. In addition, we consider that the other cognitive language learning strategies (i. e. , resourcing, translation, grouping, note taking, deduction, recombination, contextualization, elaboration, and transfer) correspond to explicit knowledge processes because the learner is able to access verbally the internal representational processes used for producing and understanding language (see Appendix B and C for the operational definition of cognitive strategies). Social-affective language learning strategies pointed out by O' Malley et al. (1988) include: cooperation, questions for clarification, formal practice, and functional practice (see Appendix B for the operational definition of social-affective strategies).

Review of the Literature on Methodological Problems

The exploratory-interpretative paradigm. The aim of the exploratory-interpretative paradigm applied to second language learning situations is to understand how learners reconstruct language processes, the view of self as a language learner, and of their extralinguistic knowledge. According to Grotjahn (1987), the researcher herself becomes a research instrument by virtue of her role as interpreter. Thus, in this research study, as much as possible the adequacy of the researcher' s interpretations and reconstructions of the subject' s introspective statements, cognitions, and personal theories were restated to the subject' s agreement. That is, the researcher attempted to validate the communication procedure used because according to Grotjahn (1987) the validity of introspection as a data collection method is related to the conceptualization of language and the theoretical model followed by the researcher. As a result, introspection methods follow a conceptualization of language given by cognitive psychological (e. g. , Bialystock, 1978; Karmiloff-Smith,

1979) and psycholinguistic approaches (e. g. , Chomsky, 1957) reflected in the exploratory-interpretative paradigm. As the objective of this study is to explain the influence of cognitive, cultural, and linguistic variables on concept formation in second language learning with the goal of developing a model and raise research questions, the exploratory-interpretative paradigm was adopted.

Performance techniques versus introspective methods of data analysis. Historically there has been a dichotomy between second language learning methods that focus on product and process levels of second language learning data analysis (i. e. , qualitative and quantitative paradigms) as well as between different forms of knowledge in second language learning (i. e. , declarative or explicit versus procedural or implicit knowledge). Regarding methods that focus on data analysis at the product level, Færch and Kasper (1987) defined performance techniques that focus on different levels of analysis of observable language behaviors; which include contrastive, error, and performance analysis. Contrastive analysis focuses on the linguistic comparison of utterances produced by the learner in terms of similarities (i. e., positive transference may result) and differences (i. e. , negative transference may result) identified in first and second language. Error analysis explains the learner' s utterances based only on the linguistic errors made. Performance analysis tries to explain the learner' s linguistic productions based on errors and correct utterances. That is, language utterances produced by two different language learners may look the same at the observable level using contrastive linguistics, error or performance analysis techniques. However, if these same utterances are analyzed by the learners who produced them at the introspective level, new access to different underlying internal representations at the metacognitive and metalinguistic levels will be revealed.

In contrast to performance techniques, we suggest that learners use different strategies and cognitive processes at the internal representational level that can not be observed in language utterances that may look alike at the behavioral level. Moreover, we

consider that the addition of the learner as an "active knowing informant" who can explain the reasons for producing second language utterances gives the data a psychological dimension. That is, introspective methods give access to metacognitive and metalinguistic processes in which the informant has a double role of subject and co-researcher whose subjective explanations of verbal productions and underlying processes were of central importance for the process of theory construction in this study. Thus, according to Grotjahn (1987) an "epistemological subject model" was taken in this study.

Introspective methods for data collection use verbal reports that are considered to have the methodological advantage of bringing automatic processes for the production of language to the conscious attention of learners when they try to explain the what, how, and why of their language performance (Færch and Kasper, 1987). Thus, the use of verbal reports similar to the methods used in cognitive psychology is a fairly new data collection and analysis procedure followed in second language research. Then, the use of verbal reports opens up the possibility of understanding the influence of cognitive processes and cultural symbolic meanings on semantic concept construction in second language learning. We propose that the interface between cognition and language can be studied through concept formation; where verbal, cultural, and abstract meaning is constructed by the second language learner using the semantic function of language. It is at the semantic level where second language learners can form linguistically and culturally bound concepts.

Regarding the dichotomy between different forms of knowledge in second language learning, there is a historical problem related to the difficulty of labeling and defining semantic processes, due to the presence of different levels of data analysis (i. e. , overt linguistic performance or internal representational processes). Færch and Kasper (1987) refer to the declarative versus procedural knowledge dichotomy in relation to forms of knowledge. These authors defined declarative knowledge as articulated and structured macroprocesses forms of language learning that can be brought to the learner's attention for explaining metalinguistic judgments. Procedural knowledge is defined by these authors as

automatic cognitive and interactional microprocesses forms of language learning that can not be accessible for introspective report. However, Færch and Kasper (1987) argued that procedural knowledge could be brought to consciousness by problem solving tasks that involve slow and controlled processing, which cause a breakdown of automatic processing. They used as an example tasks that make the language learner face a problem in reception or production due to a lack of relevant declarative linguistic or other knowledge. These problem-solving tasks initiate the production of linguistic intuitions that may take the form of metalinguistic judgments. Færch and Kasper ' s (1987) argument about gaining conscious access to procedural knowledge is related to our argument that when second language learners are stimulated to think about linguistic problems or the researcher probes their linguistic ütterances, learners may gain new insights or construct new knowledge through inferential reasoning.

Færch and Kasper (1987) stated that the methodology used for data collection in second language learning has shifted from experimental to introspective methods in order to reconstruct the learner's cognitive processes. The psycholinguistic data selected for this project uses introspective methods for reconstructing the learner's cognitive processes as an example of how learning a second language leads the student to the construction of concepts or representations that illustrates the semantic function of language. We propose that introspective methods can be applied to the study of dichotomies in methodologies and forms of knowledge, as verbal reports can be used as: (a) instruments for the analysis and reconstruction of language production in terms of metacognitive, cognitive, and affective processes and strategies; and (b) a psycho-pedagogical technique for stimulating the learner to gain new insights for re-representing knowledge in different forms within a continuum in relation to different linguistic and cultural contents. Thus, it is our argument that problem solving tasks used with verbal reports can help the researcher to understand the relation between cognitive processes and strategies, forms of knowledge, and linguistic and cultural content represented.

We also propose that at the same time the process of interviewing learners help them to access internal metacognitive and metalinguistic processes that accelerate language learning, due to the presence of new conceptual connections and inferences made by the learner during the verbal report. Moreover, the reconstruction of language processes by the same learner allows the researcher to get at a deeper level of analysis, because it is the same learner who attempts to explain what metacognitive and cognitive processes are taking place when he or she produces observable verbal behaviors in the second language. Thus, the utterances produced in the second language by the learner acquire new "objective" meaning when they are explained by the same subject, because the researcher is not overimposing an inference for explaining the utterances; neither the researcher is trying just to classify the learner's utterances according to the type of linguistic errors made at the performance level.

New Triple-Interactional Model Proposed: Influence of Cognitive, Linguistic, and Cultural Factors on Semantic Concept Formation

With the objective of integrating this literature review on cognitive processes and methodological dichotomies, we present a triple interactional model developed by Gonzalez (in press) which integrates the influence of cognitive, linguistic, and cultural factors on semantic concept formation. It is proposed that the construction of abstract and symbolic representations is an active transformational process because the learner develops cognitively through interiorization, transformation, and concept re-representations in three interactional systems: conceptual, linguistic, and cultural. It is hypothesized that conceptual, cultural, and linguistic factors affect the use of metacognitive, cognitive, and affective strategies for constructing different forms of knowledge at different developmental phases by second language learners. Thus, it is proposed that the characteristics of forms of knowledge depend on cognitive, cultural, and linguistic factors. Cognitive factors include language learning strategies, forms of knowledge, and developmental phases. Linguistic factors include two functions in relation to gender: (a) the linguistic function at the morphological syntactic level, and (b) the semantic function that includes general rules,

regular cases, and exceptions. Cultural factors include two levels: (a) by origin, in relation to natural physical gender including animates, and non-natural origin in relation to inanimates; and (b) by languages, in relation to sociocultural symbolic meanings common to Spanish and English, and unique to the Spanish language; and in relation to linguistic structures and markers common to Spanish and English. We propose that these three factors, cognitive, linguistic, and cultural merge in the semantic function of language, represented in this study by the semantic categories for gender. That is, the interface of linguistic structures, non-verbal concepts, and cultural concepts through the semantic function of language influence the formation of concepts at three levels: verbal concepts, non-verbal sociocultural symbolic meanings, and cultural conventions for linguistic structures (as shown in Figure 1).

Insert Figure 1 about here

Thus, two major cases of conceptual development may exist in a second language learning situation: (a) if the semantic function, the natural or linguistic origin of gender, the sociocultural symbolic meanings, and linguistic structures and markers exist in both languages, then the learner might instantiate the representation of the first in to the second language; and (b) if the semantic function, the natural or linguistic origin of gender, the sociocultural symbolic meanings, and linguistic structures and markers exist only in the second language, then the learner might have to construct a new non-verbal representation that constitutes a new concept. Thus, we propose that learning a second language leads to the construction of new representations that are linguistically and culturally bound. Two basic language learning processes are proposed: (a) assimilation, when the abstract concepts and cultural and linguistic representations coincide in both the first and second language; and (b) accommodation, when the new abstract concepts with their

correspondent cultural and linguistic symbolic representations need to be constructed, as they are different between the first and the second language.

As a result, the process of concept formation in first and second language can vary depending on the conceptual complexity and the symbolic sociocultural context of usage of the linguistic structures. Whether a specific concept would be represented with a linguistic structure and marker and its corresponding symbolic meaning might depend on the cultural value that it has, and might reflect the historical-social process of the development of the linguistic structure. Languages differ in what aspects of meaning they represent directly in their linguistic structures, and this fact influences the formation of symbolic meanings and semantic categories. Gender was selected because Romance languages have many markers at the morphological and syntactic levels of gender where English has few or none. It is important to note that gender is just one example of many linguistic structures and markers that are different between Spanish and English, and also that this theoretical model and the derived instructional method can be generalized to other languages.

Gonzalez (in press) conducted a study exploring the same triple-interactional model of the influence of cognitive, cultural, and linguistic factors affecting concept and language development explored here. Both studies focused on the linguistic structure of gender, and used problem solving tasks. The difference between these two studies is related to the age and chacacteristics of this population. In the former study, Gonzalez (in press) included verbal and non-verbal problem-solving situations for children. The present study includes only verbal problem-solving situations based on which reports were generated by college students. Gonzalez (in press) found that bilingual kindergarten and first grade Hispanic Spanish/English children represented concepts in two different systems. The first representational system was common to both languages, non-verbal, abstract, and universal. The second representational system was verbal or semantic, specific to the Spanish language for the verbal, gender-based cases, and thus culturally and linguistically bound. Thus, one universal and abstract representational system will be constructed when

non-verbal and verbal concepts coincide in both languages. In contrast, two culturally bound and semantic representational systems will be constructed when non-verbal and verbal concepts are different across languages. In terms of the relationship between cognition and language, the abstract representational system was always at a higher developmental level than the semantic representational system. Thus, Gonzalez (in press) concluded that cognitive development precedes language development, as a universal process of concept construction. In addition, there was also a difference in the conceptual developmental level attained in animate and inanimate content knowledge domains. In sum, it can be concluded based on this literature review that the complexity of the problem of second language concept formation calls for a multidimensional model that encompass cognitive, linguistic, and cultural factors through an introspective method using verbal reports and problem-solving tasks.

Method

Subjects. Seven students from a lower division intensive Spanish class at The University of Texas at Austin volunteered to participate in the verbal reports. The first author of this study was the instructor for the class who also acted as the interviewer. Personal background data was also collected at the beginning of the semester by giving students open-ended questions regarding their major, rank, age, second or foreign language background, and personal objective for studying Spanish as a second language. All the five female students were from an Anglo ethnic background, one male student was from a Hispanic background, and one male student was from an African-American background. All students were monolingual English in the process of learning Spanish as a second language, all between the ages of 19 and 21. Five students were Freshmen and two students were Juniors. Their major ranged from Psychology (2) to Communications (2), to Education (1), and to Computer Science (1). None of the students were Spanish majors. Five students had at least two years of high school Spanish, one student had studied four years of French, and one student had no prior language background. Three

subjects reported that they wanted to study Spanish for travel purposes and to communicate with native speakers, who usually were family members. Four subjects reported the desire to study Spanish for career purposes and to fulfill university requirements. When asked about their expectations for the Spanish class at the beginning of the semester, subjects reported that they expected to acquire "a strong knowledge of the language and the culture".

Given that this study focuses on in-depth analysis of individual cases, we consider important to include relevant characteristics of the subjects. Names have been changed in order to protect the identities of the subjects. All female subjects had some prior knowledge of the Spanish language. Karen was a 19 year-old Freshman majoring in Psychology. She had studied French for four and a half years in high school, and had spent two months in rural Ecuador recently. Karen had received prior to her trip to Ecuador, two years of Spanish tutoring. She had the expectation to return to South America, so her motivation to study Spanish was related to her goal to return to a small village in Ecuador again. Jessica was a 19 year-old Junior student with a major in Journalism. She had taken some French as well as some high school Spanish. Both of her parents speak some Spanish. When asked about her motivation for learning Spanish, Jessica reported that she would like to communicate with native speakers and the Spanish speaking population of Southern Texas. Helen was a 18 year-old Freshman, who was majoring in Communications. She had had two years of high school Spanish, and had traveled extensively in Mexico. She reported that learning Spanish would better serve her travel needs. Heather was a 21 year-old Junior student majoring in Psychology. She had two years of high school Spanish and anticipated traveling in Spanish-speaking countries in the near future. Lynn was an 18 year-old Freshman, whose major was in bilingual education. She had taken high school Spanish for two years, and considered learning how to speak Spanish a mandatory skill in bilingual education.

One of the male subjectsl, Robert, has had contact with the Spanish language since early childhood due to a Hispanic background from his mother's family. Robert was a 19-

year-old Freshman student, who had not chosen his major yet. He had two years of Spanish in high school before, and had maternal grandparents who spoke to him only in Spanish when he was a child. Due to Robert's background in the Spanish language, his comprehension level of the Spanish language was higher than his production level, and his pronunciation was pretty good. In addition, it is important to mention that Robert was intrinsically motivated to learn Spanish because he had a positive attitude toward the Hispanic culture and the Spanish language.

There was only one subject who had had no contact with the Spanish language. Michael was an 18 year-old Freshman from an African-American background, majoring in Computer Science. Michael had not taken any Spanish classes in high school, neither had he been exposed informally to Spanish before. Thus, he was the only student with no prior background in the Spanish language. At the beginning of the semester Michael reported that he expected to speak Spanish fluently and to understand native speakers. He was under the impression that learning Spanish would be easy for him.

Instructional method. The instructional method used for teaching Spanish for this class was focused on concept construction at the linguistic, cultural, and abstract levels. This conceptual approach offered the learners the possibility to discover and understand the underlying symbolic sociocultural meanings and different conceptual classifications of the world given by different linguistic structures in the second language. Learners were stimulated to discover the underlying cultural meaning and conceptual classifications when learning new linguistic structures. The instructor and researcher for this class acted as a facilitator for modeling how to think with the Spanish language in order to discover the semantic categorizations that are culturally bound. It is important to note that the instructor for this class is a native speaker of the Spanish language, who is also bilingual (Spanish/English) and bicultural. Students were presented with linguistic cases and were stimulated to discover the underlying linguistic and semantic rules. For instance, in the case of gender, the linguistic rule is related to cultural and abstract classifications that call

for using extralinguistic knowledge of natural gender (i. e. , physical) for animates and non-natural gender (i. e. , sociocultural linguistic conventions) for inanimates. Thus, this conceptual approach stimulates the learner to understand that the linguistic rule for assigning gender to nouns (i. e. , nouns ending in "o" are masculine, and nouns ending in "a" are feminine) is connected with cultural extralinguistic knowledge (i. e. , symbolic connotative meanings of nouns) and abstract classifications in the Spanish language (i. e. , animates can have two genders due to the presence of a natural origin gender, and inanimates can only have one gender which is given by a linguistic convention) that are semantic in nature (i. e. , meanings of words are culturally and linguistically bound).

Instruments. Immediately consecutive verbal reports were used for data collection. Subjects were asked to complete two problem-solving tasks involving definitions and a role-playing situation and immediately after the researcher interviewed the subjects. The verbal reports were conducted in the office of the instructor for the class and first author of this paper, which was a quiet environment. Verbal reports were audio recorded for subsequent analysis. The questions used in the verbal reports were general open-ended questions common to all subjects, and also some specific questions were used following the train of thought of the subject. The researcher always used a general question referring to the underlying reason that the subject had for producing a specific linguistic structure of interest for the study. The general question was: Why did you use _____ (specific linguistic structure) ? The researcher would repeat the question or clarify the answers given by the subject. Restating the subjects' answers was considered important so that correct interpretation and categorization of the subjects' reports could be accomplished during data analysis. It was also considered important to probe subjects by asking them if a change in the linguistic gender of the noun could be made. Probing stimulated some subjects to get new insights leading to construct higher forms of knowledge during the interview (e. g. , new connections between intralinguistic and extralinguistic knowledge were made). The researcher directed the verbal reports to her area of interest (i. e . , gender

assignment for nouns and strategies used for constructing extralinguistic and intralinguistic forms of knowledge and their interactions); however, subjects were always given the freedom to bring topics naturally and to follow their own ideas during their verbal reports. Structure to the responses was provided later by the researchers through content analysis. Thus, the focus of the questions asked by the researcher was on the subjects' level of understanding of linguistic structures in relation to underlying cultural symbolic meanings and abstract categories of knowledge. The questions asked by the researcher focused on the reason why a particular linguistic structure had been produced by the language learner.

Two problem-solving tasks were designed for conducting verbal reports in order to access metacognitive, cognitive, and affective language learning processes. The first task consisted of defining three nouns denoting specific linguistic gender cases for animates in Spanish. Subjects were required to produce the appropriate article for the noun, and to use categories and descriptions to fill in the complement part of the definition. The first and second nouns corresponded to neutral gender cases in which the article defines if the animate referent is feminine or masculine (e. g. , "el/la jóven, el/la cliente"). The third noun corresponded to a collective noun for animates that is a special case (i. e. , generally nouns ending in "e" tend to be masculine, but "gente" is linguistically feminine -"la gente"-; and moreover is counter the linguistic rule stating that masculine prevails over feminine gender -"gente" is linguistically feminine and encompasses both physical genders-). Subjects were asked to write at least 5 words per definition, and to define the word so that their classmates could guess the word being defined. Students were used to define nouns as a class activity, used for stimulating the use of categories and descriptors for learning new vocabulary.

The second task was a situation that gave the subject a real-life context for communicating functionally with the Spanish language. The following directions were given to the subject for the second task: "You are at a Mexican restaurant and you are very hungry. You would like to accomplish three actions: (a) call the attention of the waitress;

(b) order 7 items: tortillas, chicken, rice, tomatoes, flan, and apple pie; and (c) ask for the bill". Subjects were asked to write three complete sentences, one per each action, with at least 5 words per sentence. Subjects were also told to concentrate only on what they would say in order to accomplish the three actions, and not to write a dialogue between them and the waitress. That is, the situation was asking the subject to play the role of the client in a restaurant.

Contextual information for the psycholinguistic cases studied. These seven cases using immediately consecutive verbal reports have been collected as part of a broader research study on concept learning of linguistic structures and sociocultural symbolic meanings of gender that are unique to the Spanish language. These seven immediately consecutive verbal reports were based on two problem-solving tasks in which the student was asked to solve some linguistic problems in a written form. The first task consisted of defining three nouns denoting specific linguistic gender cases for animates in Spanish. The second task was a situation that gave the subject a real-life context for communicating functionally with the Spanish language. For both tasks, the student was given instructions in English and he was asked to supply the correct gender form in his written answers. Immediately after the task was completed, the student was asked to explain why a particular form was correct or incorrect. The focus of the questions was on gender markers, because this happens to be a linguistic structure where there is a conceptual difference between English and Spanish.

A total of 39 different samples of retrospective interviews were collected based on two quizzes, three pop-quizzes, and two in-class compositions during the course of a semester. Five out of the seven subjects who participated in the immediate consecutive verbal reports participated in the retrospective verbal reports. In addition, eight new subjects participated in the retrospective verbal reports. Thus, a total of thirteen subjects participated in the retrospective verbal reports. In addition, seven subjects participated in a classification verbal and non-verbal task that presents a problem related to semantic and

cultural meanings of linguistic structures for gender in Spanish. The same five subjects who participated in the immediate consecutive and retrospective verbal reports also participated as volunteers for this classification task.

Data of the written explanations for incorrect responses on in-class work (i. e. , quizzes, pop-quizzes, compositions) was also collected for all the thirteen subjects, with an average of three pieces of written explanation per subject. Students gained extra credit for the Spanish class by responding in writing to the following questions in relation to each error made: (a) what is the correct answer ?, (b) why did you make the error ? (explain the strategy that you were using at the time of making the error), and (c) why the new answer given is correct ? (explain the new strategy that you are using now).

Other pieces of data were collected as well, including: (a) an oral interview that gives a sample of the actual production level of the subject when communicating for pragmatic purposes; (b) a diagnostic test at the beginning of the semester for assessing the students' Spanish language proficiency level; and (c) a Likert scale administered to the students at the end of the semester in order to give them the opportunity to evaluate the instructional method used for teaching them new concepts.

Variables. Three variables or factors influencing concept formation in second language learning situations were taken in to consideration in this study: cognitive, cultural;, and linguistic. Cognitive factors include language learning strategies, forms of knowledge, and developmental phases. Linguistic factors include two functions in relation to gender: (a) the linguistic function at the morphological syntactic level, and (b) the semantic function that includes general rules, regular cases, and exceptions (see Appendix D for the definition of semantic categories for gender). Cultural factors include two levels: (a) by origin, in relation to natural physical gender including animates, and non-natural origin in relation to inanimates; and (b) by languages, in relation to sociocultural symbolic meanings common to Spanish and English, and unique to the Spanish language; and in relation to linguistic structures and markers common to Spanish and English.

Data analysis. Theory triangulation was used as we tried to interpret a single set of data from different integrated theoretical perspectives (i. e. , Bialystock, 1978; Karmiloff-Smioth, 1979; O'Malley et al. , 1988) associated with specific variables of interest and theoretical and applied objectives in this study. Data analysis was carried out by means of interpretative procedures (i. e. , qualitative content analysis of nominal categories) in order to find associations or patterns among variables which were revealed in subjects' productions. We "let the data speak to us", as hypotheses were not stated a priori; just research questions were pointed out in relation to some expected outcomes. Thus, a qualitative data analysis approach was taken in this study, in which theory was constructed with heuristic and applied implications.

Three levels of analysis were differentiated in this study, the "utterance", the "cluster", and the "semantic categories for gender" levels. The first level of analysis was considered an utterance that conveyed a single idea given by the subject. Each utterance was categorized independently in relation to gender cases (i. e. , encompassing linguistic -by grammatical and semantic functions-, and cultural -by origin and by language- variables) and also in relation to cognitive variables (i. e. , language learning strategies, forms of knowledge, and developmental phases). Utterances referring to the same word being discussed throughout the verbal reports were considered a second level of analysis that we called "cluster". Following the evolution of the discussion of the same cluster by the subject was considered particularly important as new levels of understanding of the same cluster emerged throughout the verbal report. Thus, the cluster as a unit of analysis could provide evidence for the argument that verbal reports are not only a tool for collecting data, but also an instructional method for developing new conceptual knowledge at higher developmental levels. These clusters were also integrated in a third level of analysis in relation to semantic gender cases (i. e. , encompassing linguistic -by grammatical and semantic functions-, and cultural -by origin and by language- variables).

In sum, verbal reports were analyzed at these three different levels (i. e. , utterances, word, and semantic categories for gender) at a case and also at a cross-case analysis levels. Analysis within each subject could reveal specific and idiosyncratic language learning styles that may be related to the effect of linguistic and cultural variables on specific language learning strategies, forms of knowledge, and developmental phases. Analysis across subjects could reveal some common or different patterns in the specific language learning strategies, forms of knowledge, and developmental phases in relation to linguistic and cultural variables. Thus, a case and a cross-case data analysis levels were anticipated as a potential source of discovering patterns of the influence of linguistic and cultural factors on the process of concept formation in foreign languages. We derived this three-step system of data analysis from the actual context of data. We approached data with an open-minded attitude, letting "data speak to us" in order to develop a structure for data analysis based on nominal categories derived from the same data bank.

Two judges (the third and fourth authors) categorized independently each subject across all nominal categories. One judge concentrated more on the linguistic and cultural variables (i. e. , semantic categories for gender) and checked on the categorization of cognitive variables (i. e. , language learning strategies, forms of knowledge, and developmental phases) made primarily by the second judge. The second judge focused more her attention on the categorization of cognitive variables, and also checked on the categorization of linguistic and cultural variables predominantly made by the first judge. Before data analysis was conducted a high reliablity across judges ($r = .81$) was established, assuring that the operationalization and individual understanding of the nominal categories was consistent and clear between judges.

The first author of this paper developed the semantic categories for gender cases encompassing the linguistic and cultural variables. The nominal categories for the cognitive variables were adapted from previous theoretical frameworks given by O'Malley et al. (1988) in relation to language learning strategies, Bialystock (1978) in relation to forms of

knowledge, and Karmiloff-Smith (1979) and Robinett and Schachter (1983) in relation to developmental phases. Judges were trained by the first author during a six week period in order to gain familiarity with the theoretical framework underlying the nominal categories, and also for achieving a high reliability coefficient across judges. Any disagreement obtained during the process of training for coding data was discussed among the first author of the paper and the two judges. When the final data analysis was done, the few disagreements arising were also discussed among the researcher and the two judges, in order to achieve a common categorization. Thus, theory triangulation and a qualitative content analysis of nominal categories were used for data analysis. 28

Results and Discussion

Data is reported and interpreted at the cross-case and individual case analysis levels. Data is going to be summarized in relation to the three levels of data analysis developed for this study: the utterance, cluster, and semantic categories levels. In addition, with the purpose of integrating the summary of this data report, data interpretation will follow the three types of focus suggested by Bogdan and Biklen (1982): (a) thesis or propositions related to the integration of literature and the triple-interactional model reviewed in this paper, (b) themes that encompass theoretical formulations emerging from the data analysis in the form of patterns or abstract conceptual categories, and (c) topics that include descriptions of specific findings. In addition, we will present quotes from individuals or groups of subjects in order to illustrate the interpretation and integration of data.

Cross-case analysis. The first emerging theme was the presence of a two-step sequential and simultaneous language learning processes: (a) at the linguistic sequential level learners used lower level cognitive strategies that corresponded to the implicit form of knowledge applied to specific semantic gender cases for inanimates (i. e. , at the marker level), and (b) at the semantic simultaneous level learners used higher level cognitive and metacognitive strategies that corresponded to the explicit relationship between intralinguistic and extralinguistic forms of knowledge applied to general semantic gender cases for

animates (i. e. , at the system or rule level). The cultural variable specifying the origin of semantic gender cases classified as inanimates and animates led the learner to make a conceptual distinction between physical gender (i. e. , extralinguistic or other knowledge) and linguistic gender (i. e. , intralinguistic knowledge) given by sociocultural conventions.

Thus, in this two-step sequential and simultaneous language learning theme emerging from the data we could observe the triple interaction between cognitive, cultural, and linguistic factors. That is, the same individual showed both levels of the sequential language learning process depending on the linguistic and cultural content domain (i. e. clustered in the semantic categories for gender) represented by the specific characteristics of the word in Spanish. Thus, we propose the thesis that language learning is a two-step process that requires concept formation of linguistic representations at the sequential level in relation to general linguistic rules; and at the same time requires concept formation of semantic representations at the simultaneous level in relation to the triple interaction of cognitive, symbolic, and linguistic factors. That is, we propose that language learning is a conceptualization process of classifying culturally and linguistically bound, and thus semantic representations. Cohen (1987) stated that "Categorization tasks are an integral part of second-language learning, as in the learning of agreement between subject and verb in person, number, and gender" (p. 90). Moreover, the two second language learning processes stated by Gonzalez (in press) in relation to assimilation of concepts that are similar between Spanish and English, and the need for accommodation processes for concepts that are different between languages was also present in this first emerging theme in the data. Then, second language concept formation relates to the specific abstract, cultural, and linguistic characteristics of the content knowledge domain to be learned; which requires accommodation and therefore the construction of new knowledge representations when abstract concepts are different across cultures and languages. At the same time, in some occasions transference of representations can occur when abstract concepts coincide across cultures and languages. The presence of one universal representational system for

abstract concepts that coincided across cultural symbolic and linguistic representations, and 30
two representational systems for semantic concepts that were culturally and linguistically bound was also found by Gonzalez (in press) in young bilingual Spanish/English children. In sum, the thesis emerging from abstract categories found in the data suggested that the same learner thinks at different developmental phases in relation to the content knowledge domain that in second language learning situations represents cognitive, cultural, and linguistic factors.

In relation to this first theme, Karmiloff-Smith (1986) stated that verbal encoding of linguistic knowledge has an essential role to play in representational change because a common and abstract explicit representational system will develop across domains. This suggests how the total cognitive system might gain access to knowledge originally limited to specific functions within a particular representational code, so that there is a subtle semantic modulation and domain-specific-developmental constraint for second language adult learners. This constraint will take learners developmental time for constructing multiple representations of the same explicit knowledge in first language code to the same implicit knowledge in the second language code. Thus, Karmiloff-Smith proposed the presence of a semantic representational system related to specific domains of knowledge that can be re-represented in a more abstract representational system that explicitly links first and second language domain knowledge.

With the purpose of illustrating this first emerging theme quotes from learners in relation to specific words will be used. The cluster "gente" (people in English) elicited higher level cognitive (e. g. , deduction) and metacognitive (e. g. , inferencing) strategies, forms of knowledge (e. g. , explicit relation between extralinguistic general or topic knowledge and knowledge of the target language markers or system), and developmental phases (e. g. , phase three); both more frequently and with a vast repertoire across learners (as shown in Table 1). This finding can be interpreted as related to the cognitive, cultural, and linguistic characteristics of the word "gente", that show a triple interaction at the

semantic categories level. The word "gente" denotes an animate referent that has physical gender and therefore extralinguistically can have two different gender; however this word is a special semantic case at the linguistic and cultural levels. At the conceptual level the word "gente" is a collective noun that is linguistically neutral, but is a counterexample of two general linguistic rules stating that "nouns ending in "e" tend to have a masculine gender" and that "masculine prevails over feminine when nouns refer to both genders". Thus, the word "gente" is linguistically feminine and singular; however, it refers to both genders at the symbolic cultural convention level, and is conceptually a collective noun encompassing both physical genders referring to animates at the abstract level. Therefore, for the word "gente" just a sequential linguistic conceptual formation process does not suffice; the concept formation problem will be solved only if the three cognitive, cultural, and linguistic factors are taken into account simultaneously by the learner. It is our thesis that linguistically and semantically the word "gente" calls for the construction of a new concept as it goes against rules. Therefore, the learner engages into the use of metacognitive strategies at the highest forms of knowledge and developmental levels. For instance, Robert 's utterance represents a common reaction to the absurdity of the word "gente" illustrating the use of monitoring and inferencing metacognitive strategies, using a form of knowledge that points to an explicit relation between extralinguistic topic knowledge and intralinguistic knowledge at the marker level, and the third developmental phase: ".....I guess I wasn't sure like in gente, that is just a part of personas and it relates to people.....but it is just used in the "la" form".

Place Table 1 about here

The second emerging theme at the cross-case analysis level was that verbal reports revealed the underlying cognitive, metacognitive, and metalinguistic processes of second language learning used as study skills by second language learners. In relation to study

skills, Michael illustrates the use of selective attention as a metacognitive strategy, the use of explicit intralinguistic knowledge at the system or rule level, and the second developmental phase for dealing with the special semantic case that the word "gente" portraits: "So you just have to make a special note that this word is just masculine or this word is just feminine". Thus, in this example the metacognitive strategy of selective attention relates to study skills that learners had developed for dealing with special cases with the semantic categories for gender. However, still the students' attention was focused on the concious access of linguistic characteristics of the word.

A third theme was the appearance of new insights, new access to explicit knowledge and to the construction of new forms of knowledge (i. e . , new relations across linguistic concepts, new intralinguistic-extralinguistic connections, new inferences at a higher cognitive level) during the course of the interview. We felt that through verbal reports we could access "invisible" or internal language learning processes that were opened and occurred in front of us. Thus, in the process of trying to explain the reason why a particular linguistic structure was produced, the language learner could understand new forms of knowledge, which was stimulated by the questions and probing of the researcher. Thus, learners revealed in the verbal reports how they formed new concepts by re-representing knowledge from lower to higher developmental phases. That is, the results support the thesis that the type of questions raised during the course of the verbal reports was related to the type of information accessed by the subject.

The thesis that the introspective method for eliciting verbal reports can stimulate the learner to think at higher levels with the semantic properties of language is illustrated by two quotes produced by Karen referring to the same word "cliente" (client in English) appearing at two different points in the interview. At the beginning of the interview Karen explained her correct choice of masculine gender for the word "cliente" as follows: "I wasn't sure if it was masculine or feminine, but with an "e" it could be either one. I wasn't sure and it was kind of a guessing game, usually I think it's going to be masculine if it ends

in an "e" ". In the middle of the interview Karen was asked again if the word "cliente" could be only masculine. It is important to mention that before she had explained that the word "gente" could have only one gender and that idea was influencing her following utterance in relation to the word "gente": "I would think you could make it feminine, just because it has an ending that you don't need to mess with". When comparing both utterances referring to the same word "gente" at different points in time in the interview, we can observe a progression in the level of language learning strategies used: from a cognitive strategy of deduction, in which Karen was explicitly applying the linguistic rule; to a metacognitive strategy of inferencing, in which she was constructing a new explicit hypothesis of a previously unknown meaning in the second language. It is important to note that the word "cliente" also deviates from the general rule stating that "words ending in "e" tend to be masculine". The word "cliente" is a special semantic category case, as the abstract category denotes animates who can have both physical gender in relation to symbolic sociocultural conventions (e. g. , in relation to professions and occupations or collective nouns). Thus, the learner needs to construct a new concept taking into consideration simultaneously cognitive, cultural, and linguistic factors. Therefore, if thought-provoking questions are used for eliciting verbal reports, the interviewer can help the learner to think with language at higher levels.

The issue of the type of information accessed by the subject being related to the type of questions used is presently still a controversy because there are different positions regarding the validity of data collected through verbal reports. Some authors argue that accessing internal language learning processes and representations through verbal reports is not possible (e. g. , Seliger, 1983). However, it is our argument that the type of questions made by the researcher will make a difference in what level of knowledge is accessed: language use (i. e. , how do learners use the language at the pragmatic and implicit level) versus language learning (i. e. , how do learners represent language, what strategies do learners use for producing and understanding language at the explicit level).

Several authors support our same thesis that the type of questions influence the level of cognitive processes accessed. According to Cohen (1987) in this study we ask for a verbalization of the learning process which resulted in a description of internal language processes (i. e. , language learning strategies and forms of knowledge used), as well as a description of the study skills that learners used. White (1980) pointed out that the type of questions and tasks included by the researchers for generating verbal reports will influence how much attention subjects could pay to their cognitive processes. Hayes and Flowers (1983) suggested that although some thinking processes are unconscious, we can still explore and collect evidence on cognitive processes that are not available in overt language performance. Dechert (1987) stated that part of human cognitive processes are accessible for verbalization (i. e. , declarative knowledge), and part are not accessible (i. e. , procedural knowledge). Thus, it is our thesis that the type of questions used in eliciting verbal reports in this research study served as an opportunity for language learners to consciously access new insightful knowledge at higher developmental levels. Thus, we consider that verbal reports can serve as a psycho-pedagogical tool for increasing accessibility to declarative knowledge by the language learner. According to Dechert (1987) verbal reports in second language research are tools for documenting the inherent structure and rules of language processing. We propose that it is through verbal reports that we can discover how language learners represent knowledge through language, and as a result we can study the relation between language and thought. Subjects were trained throughout the semester to focus on concept formation and in accessing implicit knowledge through reflection for re-representing their procedural or implicit knowledge in an explicit form. This conceptual approach for teaching Spanish as a second language may have had an influence on the presence of new inferences and the re-representation of knowledge at higher levels that we could observe during the interviews. However, at the same time higher levels of knowledge levels attained during the process of interviewing subjects could have been influenced by the type of questions and probing used by the researcher. Then, it

is important to conduct a second study with a control group of subjects who have not been exposed to a conceptual instructional approach. 35

The fourth emerging theme across cases was the preference of specific language learning strategies that appeared more frequently in relation to forms of knowledge used by the learners. For the explicit form of knowledge the higher level cognitive strategies preferred were deduction and elaboration, which indicated the application of rules for concepts that were different between Spanish and English (i. e. , cognitive variable indicating differences by languages). For the implicit form of knowledge the learners the lower level cognitive strategies preferred were auditory representation, visual imagery, repetition, and the use of key words.

Individual case analysis. The first emerging theme was the presence of different forms of knowledge and developmental phases within the same subject in relation to the cultural and linguistic characteristics merged in the semantic categories for gender that appeared for different words. Words that corresponded to the general linguistic rule evoked lower level cognitive strategies in every subject. In contrast, words that corresponded to specific semantic category cases evoked higher level cognitive and metacognitive strategies. For instance, by comparing the word "gente" (see Table 1) and the word "jóven" (this is a noun that does not have a one-to-one word translation in English, the meaning conveys the idea of a young person without specifying the gender of the subject -see Table 2-). The word "gente" required in learners a higher frequency of cognitive and metacognitive strategies, and to make an explicit relation between intralinguistic and extralinguistic knowledge. The word "jóven" elicited in learners a lower frequency of metacognitive strategies, and an explicit intralinguistic form of knowledge. Thus, the word "gente" was a special semantic category that required simultaneous thinking as it was further away from the general rule in comparison to the word "jóven". As explained above, the word "gente" differs from the general rule at three levels: cognitively, culturally, and linguistically. The word "jóven" coincides with the general rule at the

cognitive or abstract level, as animate referents do have two physical genders which is reflected in the cultural and linguistic levels ("el/la jóven" -just by changing the gender of the article, the word can acquire a masculine or feminine gender-). Thus, although at the linguistic and marker level the word "jóven" differs from the general rule ("an "a" ending is feminine and an "o" ending is masculine) it still follows the general rule at the cognitive and cultural levels. In sum, the same learner could use different learning strategies, forms of knowledge, and developmental phases in relation to different content domains of knowledge. That is, words that differed more from the general linguistic rule required more simultaneous and higher level thought processes than words that were closer to the general linguistic rule in the same learner.

Place Table 2 about here

In addition, four more related themes emerged from data analysis at an individual case analysis level. The second emerging theme was the presence of individual learning styles that were associated with a tendency to perform at a specific performance level and to show potential for achieving at a higher developmental phase. A third emerging theme observed in individuals was a tendency to use specific cognitive and metacognitive strategies that corresponded to higher or lower forms of knowledge and developmental phases, such as explicit or implicit intralinguistic and extralinguistic forms of knowledge. A fourth emerging theme was the use of a limited or a vast repertoire of cognitive and metacognitive learning strategies in a specific learner, which was also related with the preferred form of knowledge used and developmental phase achieved. A fifth emerging theme was the relation between learners' specific strategies, forms of knowledge, and developmental phases and their personal experiences with the Spanish language (i. e. , context of second language learning -formal and/or visits to Spanish speaking countries-,

knowledge of other second languages -French-, contact with the Spanish language during early childhood).

All these four themes emerging from the data can be illustrated by the comparison of the two individual learning styles of Robert and Jessica, which are different and yet similar at the same time. Robert used a range of developmental phases, showing all three developmental phases in relation to both implicit and explicit forms of knowledge. His individual learning style is contrastingly different than the other subjects in his frequent use of implicit learning strategies. In spite of showing lower levels of thinking in comparison to the other learners, Robert also demonstrated a broad spectrum of learning strategies and displayed the largest vocabulary and topic knowledge. Robert used cognitive (i. e. , translation, grouping, deduction, recombination, imagery, key word, and contextualization), metacognitive (i. e. , selective attention, self-evaluation, and inferencing), as well as social affective strategies (i. e. , question for clarification) for second language learning. Even though Jessica is showing also a broad range of developmental phases, she uses a limited repertoire of cognitive (i. e. , deduction, auditory representation, and contextualization) and social affective strategies (i. e. , question for clarification) consistently, and shows the emergence of some metacognitive strategies (i. e. , monitoring and inferencing).

Thus, both Robert and Jessica have a common pattern in relation to the broad range of developmental phases at which they performed. However, at the same time they show unique profiles in relation to the variety, frequency, and level of learning strategies used. Their language learning background histories can also shed some light in our interpretation of the individual learning styles shown by these two learners. Robert had had the chance to use Spanish for communication with his grandparents during early childhood. As a result, he had some implicit knowledge of the language as a former native speaker, as well as some explicit knowledge as an adult second language learner in a formal context. Jessica had had some background in learning French and Spanish as a second language only in

formal contexts, and thus she used frequently explicit intralinguistic forms of knowledge both at the rule and specific cases levels.

Conclusions

It is concluded that there is a triple interaction between cognitive, cultural, and linguistic factors affecting concept construction in second language learning situations. In the verbal reports it was revealed that concept construction is a two-step process, encompassing a sequential and a simultaneous process in relation to the linguistic or semantic levels of content knowledge domains in second languages. The linguistic level of concept construction occurred when learners accessed implicit intralinguistic forms of knowledge at a first developmental phase. The semantic level of concept construction occurred when learners accessed explicit intralinguistic and extralinguistic forms of knowledge at a second and third developmental phases. Thus, the same learner could access higher or lower forms of knowledge, and performed at different developmental phases in relation to the particular semantic and linguistic characteristics of the second language content knowledge.

At the same time we also found particular individual learning styles that were related to their individual learning histories. The most advanced students could produce and comprehend explicitly the relations between knowledge of the second language and all other forms of extralinguistic knowledge including the first language, sociocultural, and topic knowledge. In addition, the more advanced learners were able to access explicit knowledge in a secure, clean, and firm form. In contrast, the less advanced learners could not produce nor comprehend the relations of knowledge intralinguistic and extralinguistic forms of knowledge. In contrast, the less advanced learners showed only an implicit knowledge at the intralinguistic level, with no understanding of the relation between intralinguistic and extralinguistic knowledge forms. Some learners were at an intermediate level of explicit production and comprehension of the relations between the second

language and all other forms of extralinguistic knowledge. These intermediate learners could produce and comprehend some specific cases of the relation between extralinguistic and intralinguistic knowledge, but could not generalize their explicit knowledge (i. e. , topic knowledge). All the learners benefited from the use of verbal reports because with the help of the scaffolding role of the interviewer, they could gain implicit and/or explicit knowledge of the relations between intralinguistic and extralinguistic knowledge.

Scientific and Educational Implications of the Study

The study is relevant from a theoretical and applied perspectives. The study presents a model for gaining understanding of the influence of linguistic and cultural factors on conceptual learning in second language situations. This model leads to gain insight on how language learners develop concepts for new linguistic structures and symbolic cultural meanings in a second language. At an applied level, the study suggests a new educational approach for teaching a foreign language through conceptual learning using verbal reports for gaining higher levels of knowledge and study skills.

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Figure 1. Revised model of the influence of conceptual, cultural, and linguistic variables on the construction of abstract and semantic categories in bilingual children.

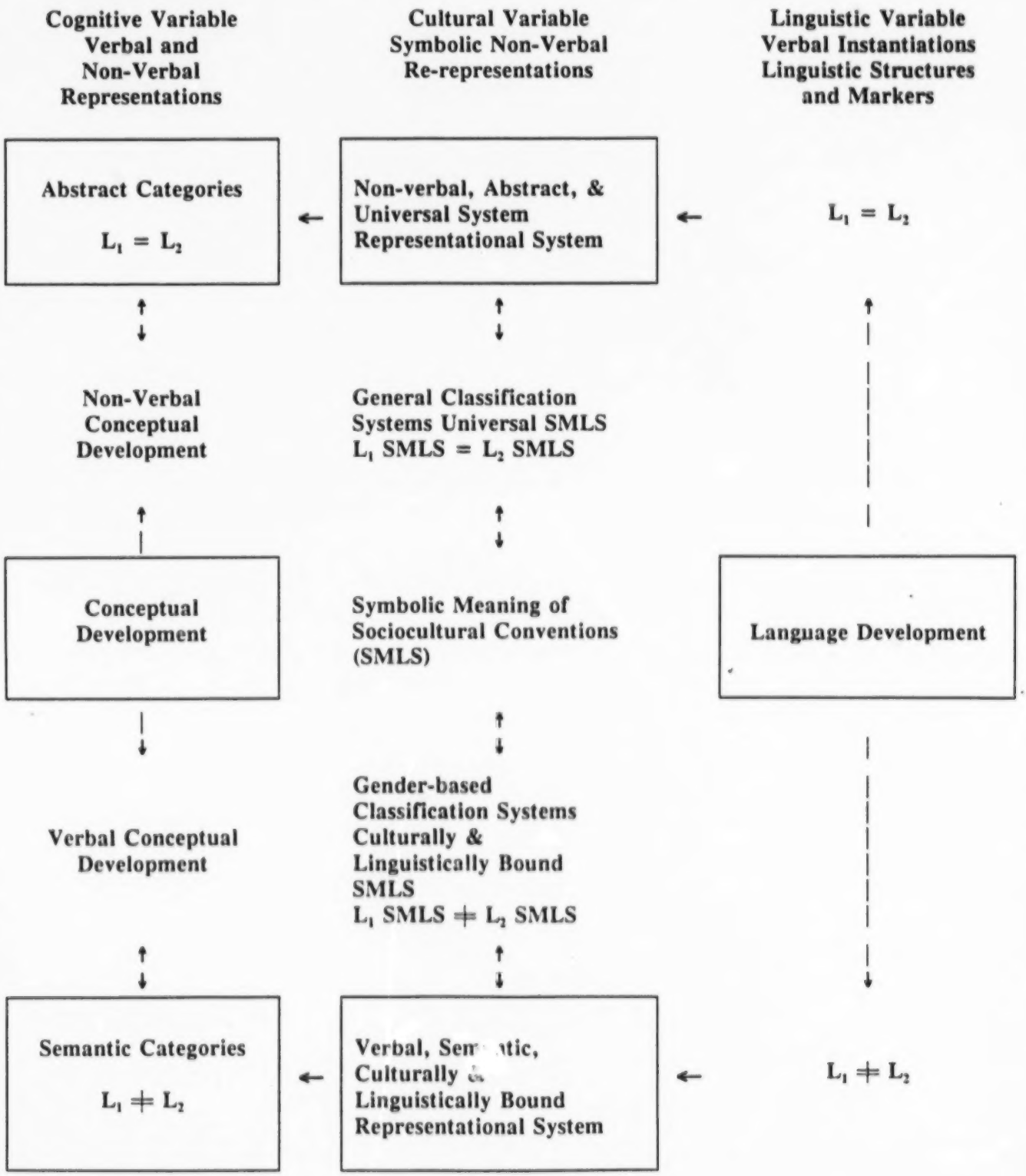

Table 1
Frequency of Language Learning Strategies, Forms of Knowledge, and Developmental Phases for the Word "Gente"

Word Gente: Special Case for the Semantic Function for Gender			
Strategy (Frequency)		Form of Knowledge [a] (Frequency)	Developmental Phase (Frequency)
Repetition	1	3 (2)	3 (2)
Translation	1	4b (2)	2 (2)
Deduction	16	4b (10) 5b (1)	2 (10) 1 (1)
Imagery	1	5a (1)	1 (1)
Auditory Representation	3	5a (1)	1 (1)
Key Word	1	5a (1)	1 (1)
Selective Attention	4	5a (1) 3 (1) 4b (1) 4a (1)	1 (1) 3 (1) 2 (1) 2 (1)
Monitoring	1	3 (1)	3 (1)
Inferencing	5	3 (3) 4b (2) 2 (1)	3 (3) 2 (2) 2 (1)
Question for Clarification	4	4b (1) 5a (1) 5b (2)	2 (1) 1 (1) 1 (2)

Note. The numbers in parentheses refer to frequencies for forms of knowledge and developmental phases.

a For the forms of knowledge category, 2= extralinguistic topic knowledge, 3 = explicit relation between extralinguistic general or topic knowledge and knowledge of the target language: markers or systems, 4a = explicit intralinguistic knowledge of the target language: system, 4b = explicit intralinguistic knowledge of the target language: marker, 5a = implicit intralinguistic knowledge of the target language: system, and 5b = implicit intralinguistic knowledge of the target language : marker.

Table 2
Frequency of Language Learning Strategies, Forms of Knowledge, and Developmental Phases for the Word "Jóven"

Word Jóven: Special Case for the Semantic Function for Gender

Strategy (Frequency)		Form of Knowledge (Frequency)	Developmental Phase (Frequency)
Grouping	2	4a (1)	2 (1)
		4b (1)	2 (1)
Deduction	16	4a (2)	2 (2)
		4b (14)	2 (14)
Imagery	4	5b (4)	1 (4)
Auditory Representation	4	4b (4)	2 (4)
Elaboration	1	4b (1)	2 (1)
Inferencing	1	4b (1)	3 (1)

Note. The numbers in parentheses refer to frequencies for forms of knowledge and developmental phases.

a For the forms of knowledge category, 4a = explicit intralinguistic knowledge of the target language: system, 4b = explicit intralinguistic knowledge of the target language: marker, 5a = implicit intralinguistic knowledge of the target language: system, and 5b = implicit intralinguistic knowledge of the target language: marker.

Appendix A

Continuum of Explicitness Model: From Implicit to Explicit Relations Between Knowledge of the Target Language and All Other Forms of Knowledge

Seven Response Categories.

1) Extralinguistic General Knowledge. Explicit justifications of responses by general knowledge outside the linguistic task (real-world, sociocultural, and first language knowledge).

2) Extralinguistic Topic Knowledge. Explicit justifications by reference to topic knowledge of the specific object focused on the task.

3) Explicit Relation Between Extralinguistic General or Topic Knowledge and Knowledge of the Target Language Markers or Systems. Justification by reference to knowledge outside the linguistic task (real-world, sociocultural, and first language knowledge), and connecting it to linguistic categories (system) or specific linguistic cases (markers).

4) a) Explicit Intralinguistic Knowledge of the Target Language: System. Justification of responses by making explicit reference to other members of the linguistic category-linguistic clues- (e.g. categories of word endings, gender matching among words).

4) b) Explicit Intralinguistic Knowledge of the Target Language: Marker. Justification of responses by explicit reference to the linguistic marker of a specific case (e.g. article or word ending of a specific word).

5) a) Implicit Intralinguistic Knowledge of the Target Language: System. Correct responses involving linguistic structures that belong to a category.

5) b) Implicit Intralinguistic Knowledge of the Target Language: Markers. Correct responses involving specific cases of categories of linguistic structures.

Appendix B

Language Learning Strategies proposed by O'Malley et al. (1988)

Metacognitive Strategies

Advance organizers. Making a general but comprehensive preview of the concept or principle in an anticipated learning activity.

Directed attention. Deciding in advance to attend, in general, to a learning task and to ignore irrelevant distractors.

Selective attention. Deciding in advance to attend specific aspects of language input or situational details that will cue the retention of language input.

Self-management. Understanding the conditions that help one learn and arranging for the presence of those conditions.

Functional planning. Planning for and rehearsing linguistic components necessary to carry out an upcoming language task.

Delayed production. Consciously deciding to postpone speaking to learn initially through listening comprehension.

Self-evaluation. Checking the outcomes of one's own language learning against an internal measure of completeness and accuracy.

Monitoring. It is a primarily a formal productive strategy however; it may be used as well as a formal comprehension strategy, to bring explicit knowledge of word meanings and structures to a comprehension task for the purpose of examining or correcting the response. It is also used for appropriateness related to the setting or to the people who are present.

Inferencing. This is a strategy whereby a language learner may arrive at particular linguistic information which was previously unknown. It is primarily a comprehension strategy. It is used when the purpose of the task is to generate an explicit linguistic hypothesis about a previously unknown meaning in a second language. The learned

develops new insights and metalinguistic awareness that point to the emergence of new knowledge due to the presence of probing in the interview process.

Cognitive Learning Strategies

Some cognitive learning strategies refer to implicit knowledge and others refer to explicit knowledge, as pointed below.

Implicit Knowledge

Repetition. Initiating a language model, including overt practice and silent rehearsal.

Directed Physical Response. Relating new information to physical actions, as with directives.

Imagery. Relating new information to visual concepts in memory via familiar, easily retrievable visualizations, phrases, or locations.

Auditory representation. Retaining the sound or similar sound of a word, phrase, or longer language sequence.

Key word. Remembering a new word in the second language by: (a) identifying a familiar word in the first language that sounds like or otherwise resembles the new word, and (b) generating easily recalled images of some relationship with the new word.

Explicit Knowledge

Resourcing. Defining or expanding a definition of a word or concept through use of target language reference materials.

Translation. Using the first language as a basis for understanding and/or producing the second language.

Grouping. Reordering or reclassifying and, perhaps, labeling the materials to be learned based on common attributes.

Note taking. Writing down the main ideas, important points, outline, or summary of information presented orally or in writing.

Deduction. Consciously applying rules to produce or understand the second language.

Recombination. Constructing a meaningful sentence or larger language sequence by combining known elements in a new way.

Contextualization. Placing a word or a phrase in a meaningful language sequence.

Elaboration. Relating new information to other concepts in memory.

Transfer. Using previously acquired linguistic and/or conceptual knowledge to facilitate a new language learning task.

Social Affective Learning Strategies

Cooperation. Working with one or more peers to obtain feedback, pool information, or model a language activity.

Question for clarification. Asking a teacher or other native speaker for repetition, paraphrasing, explanation, and/or examples.

Formal practice. It is a general concept of practice which refers to a language learner's attempt to increase his exposure to the language. Formal language refers to information that the learner has about the rules of the linguistic structure to represent meaning.

Two possibilities exist for formal practice. First, the language learner may increase his explicit knowledge of the code by availing himself of new information about that code. Since this is a strategy for increasing competence, only those things that the learner does optionally and in addition to any formal training he receives qualify as instances of this type of formal practice. The second possibility for formal practice is to operate on information already in explicit knowledge for the purpose of automatising it and transferring it to implicit knowledge. This may be accomplished by the use of language drills and exercises which attempt to familiarize the learner with information s/he already has learned so that it may be used easily.

Functional Practice. It is the use of the language in communicative situations, where the meaning of the message is the primary concern. It may comprise talking with native speakers, going to movies or reading books in which the meaning of the language is the primary focus. The effects on explicit knowledge are minimal.

Appendix C

Language Learning Strategies Proposed by Robinett and Schachter (1983) Used at the Second Developmental Phase

Overgeneralization. The learner creates a deviant structure on the basis of his or her experience of other structures in the target language, associated with redundancy reduction.

Ignorance of rule restrictions. Closely related to the generalization of deviant structures is a failure to observe the restrictions of existing structures, that is, the application of rules to new context where they do not apply. Some rule restriction errors may be accounted for in terms of analogy, in which the learner rationalizes a deviant usage from his previous experience in the target language. Other instances of rule restriction errors may result from the rote memorization of rules.

Incomplete application of rules. The occurrence of structures whose deviancy represents the degree of development of the rules acquired to produce acceptable utterances.

False concepts hypothesized. Developmental errors which derive from faulty comprehension of distinctions or contrasts in the target language.

Appendix D

Categories for Gender

There are **Intralinguistic rules and regular cases** (and also a number of exceptions to these rules and regular cases), as well as underlying **Extralinguistic concepts**. I will point to intralinguistic rules and regular cases in relation to animate and inanimate objects that correspond to extralinguistic concepts. I will also point to similarities or differences between the Spanish and the English language in relation to these Intralinguistic and Extralinguistic issues.

Conceptual factors:

Language learning strategies: subdivided in cognitive, metacognitive, and social-affective language learning strategies.

Forms of Knowledge: including 5 response categories encompassing extralinguistic, the relation between extralinguistic and intralinguistic, and intralinguistic categories.

Developmental phases: first, second, and third.

Intralinguistic factors:

-by **linguistic function** at the morphological syntactic level in reference to **gender** including:

N=Nouns, **AR**=articles, **AD**=adjectives, **NU**=numerals, **DIOP**=direct object pronouns, **IOP**=indirect object pronouns, and **DOP**=double object pronouns; **DEP**=demonstrative and **IP**=indefinite pronouns; SP= Subject Pronouns; IP= Indefinite Pronouns); ADV= Adverbs.

-by **semantic function** in reference to **gender**: This subcategory of variables include a **general rule, regular cases, and exceptions.**

Extralinguistic factors: **Cultural,** including two subcategories of variables

-by **origin:**

-**Natural physical gender**; including **Animates**, such as **people and animals**.

-**Non-natural origin gender**, established by social conventions at the linguistic structures level; including **Inanimates**, such as **objects and abstract concepts.**

-by **language**:

-**Sociocultural symbolic meanings** (connotative level) **common** to both Spanish and English.

-**Linguistic structures and markers** (denotative level) **common** to both Spanish and English.

-**Linguistic structures and markers** (denotative level) **unique to the Spanish language**.

-**Sociocultural symbolic meanings unique to the Spanish language.**

INTRALINGUISTIC RULES

GR= General Rule

There is only **one general rule** stating that nouns ending in -a (suffix) are feminine, and that nouns ending in -o (suffix) are masculine. The corresponding definite ("el" for masculine, and "la" for feminine) or **indefinite** ("un" for masculine, and "una" for feminine) **article should match the linguistic gender of the noun**. DIFFERENCE BETWEEN SPANISH AND ENGLISH

GRID= General Rule for Inanimates, Different.

These nouns only have **one linguistic gender**. Only **one linguistic gender** can exist, according to sociocultural linguistic conventions, independently most of the time of the intrinsic nature of the object. Thus, here the general rules applies: (a) an "-a" ending or suffix implies feminine linguistic gender, and an "-o' ending or suffix implies masculine gender. (DIFFERENCE BETWEEN SPANISH AND ENGLISH)

GRAD= General Rule for Animates, Difference.

People and animals most of the time take a **feminine and a masculine form**, according to the natural physical gender of the referent. In English only sometimes this change of gender in the markers of nouns happens. (DIFFERENCE BETWEEN SPANISH AND ENGLISH).

That is, we can have the following **regular cases**:

Regular Cases For Inanimates

RCI1C= Regular Case for Inanimates 1 Common.

a) Some historical linguists propose a cultural connotative meaning, that points to the cultural symbolic meaning of the object. For example, "the land/la tierra" being feminine linguistically in Spanish. In addition, the symbolic meanings is also feminine (and thus the connotative meaning) across languages and cultures. Note, that this feminine symbolic meaning may not be present in the linguistic structure and its markers, such as in the English language (which is called the denotative meaning). However, the connotative meaning can exist independently of the denotative meaning. (SOMETIMES THERE IS A

COMMONALITY IN BETWEEN SPANISH AND ENGLISH IN CONNOTATIVE BUT NOT IN DENOTATIVE MEANINGS).

b) **RCI2D**= Regular Case for Inanimates 2 Difference.

Nouns ending in "tad', "dad", "ción", and "sión" are feminine, and thus require a feminine article. Some of these nouns can be abstract concepts. For example, "la libertad", "la responsabilidad". Other nouns are concrete objects. For example: "la composición", "la televisión".

When collective nouns refer to **categories of objects (inanimates),** most of the time **they can not be pluralized,** because they are considered in Spanish **mass nouns** (e. g. , "la ropa", "la comida"). However, there are common collective nouns which are **exceptions** (e. g. , "la gente" -it is a noun ending in "-e" but it is feminine-).

DIFFERENCE BETWEEN SPANISH AND ENGLISH

c) **RCI3D**= Regular Case for Inanimates 3 Difference.

For some **inanimate nouns**, when the **gender changes, the meaning of the word also changes**. For example: "el libro" means book and "la libra" means the pound, "el manzano" means the apple tree and "la manzana" means the apple fruit., "el televisor" means the actual television as an electric appliance and "la televisión' means the media. For other **inanimate nouns a change in gender can happen and it will not affect the meaning of the word.** For instance, "el refrigerador' and "la refrigeradora".

DIFFERENCE BETWEEN SPANISH AND ENGLISH

d) **RCI4D**= Regular Case for Inanimates 4 Difference.

Some **inanimate nouns** have **a plural form**, but the corresponding **article is singular**. For example, "el lavaplatos", "el espantapájaros", "el cumpleaños".

DIFFERENCE BETWEEN SPANISH AND ENGLISH

e) **RCI5D**= Regular Case for Inanimates 5 Difference.

Inanimate nouns ending in "-e" tend to be masculine. For instance, "el accidente", "el cine", "el nombre", "el norte", "el tomate", "el restaurante".

DIFFERENCE BETWEEN SPANISH AND ENGLISH

f) **RCI6D**= Regular Case for Inanimates 6 Difference.

Inanimate nouns ending in a consonant (e. g. , "l", "n", "r", "z") **tend to be masculine**. For instance: "el papel" , "el flan","el televisor", "el arroz".

DIFFERENCE BETWEEN SPANISH AND ENGLISH

IRCI1= Irregulars Cases for Inanimates 1:

There are a number of exceptions for inanimates, such as "el problema", "el sofá", "la carne", "el agua" (DIFFERENCE BETWEEN SPANISH AND ENGLISH)

Regular Cases For Animates

a) **RCA1D**= Regular Case for Animates 1 Difference.

Collective nouns take only one gender, according to the linguistic gender. That is, the collective noun will be feminine if the word ends in "**-a**", according to the general intralinguistic rule (e. g. , "la familia") ; and in "**tad**', "**dad**", **and** "**ción**", "**sión**", according to the specific intralinguistic cases (e. g. , "las profesiones"). The collective noun will be masculine if the word ends in a consonant (e. g. , "el animal").

Collective nouns sometimes refer to people, or other times refer to categories of objects (e. g. , "la comida", "la ropa"). When collective nouns refer to **people (animates) sometimes** it can be **pluralized** (e. g. , "las profesiones", "las personas"); in other occasions only the **singular form exists** (e. g. , "el pueblo", "el público", "el ser humano"). (DIFFERENCE BETWEEN SPANISH AND ENGLISH)

b) **RCA2D**= Regular Case for Animates 2 Difference.

Variable suffixes and common stems: masculine nouns tend to end in a consonant, for forming the feminine add an "**-a** "suffix. For example, for people: "el alemán" (masculine)- "la alemana" (feminine); and for animals: "el león" (masculine) - "la leona" (feminine). (DIFFERENCE BETWEEN SPANISH AND ENGLISH)

c) **RCA3D**= Regular Case for Animates 3 Difference.

Common words and different articles: these nouns tend to end in an "**-e**" suffix more frequently. However, there are also some nouns ending in other vowels: "**-a**" and "**-o**"; or in a consonant: "**-n**", "**-r**", and "**-d**". Gender for these nouns is marked by the gender of the definite or indefinite article. For example: "el/la cliente", "el/la turista", "el/la testigo", "el/la jóven", "el/la bachiller", and "el/la huesped". (DIFFERENCE BETWEEN SPANISH AND ENGLISH).

d) **RCA4C**= Regular Case for Animates 4 Difference

Pluralization of animate nouns: Masculine prevails over feminine when there is a group of individuals or animals to which you are referring to. For example: "los estudiantes" will refer to both female and male students; "los profesores" will refer to both gender also. When you specifically point to the feminine case, then only female individuals or animals are included. For example, "las estudiantes" will refer only to a group of female students.

e) **RCA5C**= Regular Case for Animates 5 Commonality

Roles, professions, and occupations: these nouns sometimes exist in both genders, following the above regular cases explained (e. g. , el profesor/la profesora, el/la estudiante, la madre/el padre). In other occasions, the nouns can only exist in feminine or masculine forms, due to sociocultural reasons (i. e. , professions, occupations, and roles can only be feminine or masculine). This is changing very rapidly in the present. For example, "la mujer policía" has been a noun created very recently reflecting the changes in society; the same with "la doctora" and "la ingeniera". Some professions or occupations still remain only in one gender. For example, "el gerente", "el mecánico", "el ama de casa", "el hotelero", "el comandante", "el plomero". (COMMONALITY BETWEEN SPANISH AND ENGLISH).

f) **RCA6C**= Regular Case for Animates 6 Commonality

Animals with only one linguistic gender: Some nouns for labeling animals only show one linguistic gender, corresponding to the actual ending of the word. For example, "el pájaro", "la mosca", "el pinguino", "la ballena", "la zebra", "la jirafa", "el asno", "el pez", "el pollo". These nouns for animals that have only one linguistic gender refer to both female and male cases. For specifying the gender of the animal an adjective can be added, such as "macho" for male animals (e. g. , el elefante macho), and "hembra" for female animals(e. g. , el elefante hembra). (COMMONALITY BETWEEN SPANISH AND ENGLISH).

g) **RCA7C**= Regular Case for Animates 7 Commonality

Different words or stems: these nouns change completely from the masculine to the feminine form. For example, for people: el padre/la madre, el hombre/la mujer; and for animals: el toro/la vaca; el caballo/la yegua. (COMMONALITY BETWEEN SPANISH AND ENGLISH).

h) RCA8D= Regular Case for Animates 8 Difference

Common stem and different ending: these nouns share the prefix ; however, the suffix is different when feminine and masculine forms are produced. For instance: "señor/señorita, "gallo/gallina").

IRCA1= Irregulars Cases for Animates:

There are a number of exceptions to the general rule and the specific cases. For example, "actor/actríz", "la reyna/el rey", "la jefa/el jefe". (DIFFERENCE BETWEEN SPANISH AND ENGLISH).